

1651
RECEIVED

AUG 10 2008

TECH CENTER 1600/2900

Serial Number: 09/508,487

ENTERED

- ☐ Changed a file from non-ASCII to ASCII
- ☐ Changed the margins in cases where the sequence text was "wrapped" down to the next line.
- ☐ Edited a format error in the Current Application Data section, specifically: _____
- ☐ Edited the Current Application Data section with the actual current number. The number inputted by the applicant was ☐ the prior application data; or ☐ other _____
- ☐ Added the mandatory heading and subheadings for "Current Application Data".
- ☐ Edited the "Number of Sequences" field. The applicant spelled out a number instead of using an integer.
- ☐ Changed the spelling of a mandatory field (the headings or subheadings), specifically: _____
- ☐ Corrected the SEQ ID NO when obviously incorrect. The sequence numbers that were edited were: _____
- ☐ Inserted or corrected a nucleic number at the end of a nucleic line. SEQ ID NO's edited: _____
- ☐ Corrected subheading placement. All responses must be on the same line as each subheading. If the applicant placed a response below the subheading, this was moved to its appropriate place.
- ☐ Inserted colons after headings/subheadings. Headings edited included: _____
- ☐ Deleted extra, invalid, headings used by an applicant, specifically: _____
- ☐ Deleted: ☐ non-ASCII "garbage" at the beginning/end of files; ☐ secretary initials/filename at end of file; ☐ page numbers throughout text; ☐ other invalid text, such as _____
- ☐ Inserted mandatory headings, specifically: _____
- ☐ Corrected an obvious error in the response, specifically: _____
- ☐ Edited identifiers where upper case is used but lower case is required, or vice versa.
- ☐ Corrected an error in the Number of Sequences field, specifically: _____
- ☐ A "Hard Page Break" code was inserted by the applicant. All occurrences had to be deleted.
- ☐ Deleted **ending** stop codon in amino acid sequences and adjusted the "(A)Length:" field accordingly (error due to a PatentIn bug). Sequences corrected: _____
- ☒ Other: Seq 18 - Deleted number under tag (stop codon)

*Examiner: ~~The above corrections must be communicated to the applicant in the first Office Action.~~ DO NOT send a copy of this form.

3/1/95

RECEIVED

AUG 10 2000

TECH CENTER 1600/2900

RAW SEQUENCE LISTING DATE: 08/08/2000
 PATENT APPLICATION: US/09/508,487 TIME: 15:53:06

Input Set : A:\Pto.amc
 Output Set: N:\CRF3\08082000\I508487.raw

3 <110> APPLICANT: BERGSTROM, Sven
 5 <120> TITLE OF INVENTION: P13 ANTIGENS FROM BORRELIA
 7 <130> FILE REFERENCE: 454312-3150
 9 <140> CURRENT APPLICATION NUMBER: 09/508,487
 10 <141> CURRENT FILING DATE: 2000-03-10
 12 <150> PRIOR APPLICATION NUMBER: 60/059,036
 13 <151> PRIOR FILING DATE: 1997-09-10
 15 <150> PRIOR APPLICATION NUMBER: 1041/97
 16 <151> PRIOR FILING DATE: 1997-09-10
 18 <150> PRIOR APPLICATION NUMBER: PCT/IB98/01424
 19 <151> PRIOR FILING DATE: 1998-09-04
 21 <160> NUMBER OF SEQ ID NOS: 31
 23 <170> SOFTWARE: PatentIn Ver. 2.1
 25 <210> SEQ ID NO: 1
 26 <211> LENGTH: 25
 27 <212> TYPE: PRT
 28 <213> ORGANISM: Borrelia burgdorferi
 30 <400> SEQUENCE: 1
 31 Thr Ser Lys Gln Asp Pro Ile Val Pro Phe Leu Leu Asn Leu Phe Leu
 32 1 5 10 15
 34 Gly Phe Gly Ile Gly Ser Phe Ala Gln
 35 20 25
 38 <210> SEQ ID NO: 2
 39 <211> LENGTH: 20
 40 <212> TYPE: DNA
 41 <213> ORGANISM: Borrelia burgdorferi
 43 <220> FEATURE:
 44 <221> NAME/KEY: variation
 45 <222> LOCATION: (1)..(20)
 46 <223> OTHER INFORMATION: N stands for any nucleic acid
 48 <220> FEATURE:
 49 <221> NAME/KEY: variation
 50 <222> LOCATION: (1)..(20)
 51 <223> OTHER INFORMATION: R stands for G or A
 53 <220> FEATURE:
 54 <221> NAME/KEY: variation
 55 <222> LOCATION: (1)..(20)
 56 <223> OTHER INFORMATION: Y stands for T/U or C
 58 <400> SEQUENCE: 2
 W--> 59 acntcnaarc argayccnat 20
 62 <210> SEQ ID NO: 3
 63 <211> LENGTH: 20
 64 <212> TYPE: DNA
 65 <213> ORGANISM: Borrelia burgdorferi
 67 <220> FEATURE:
 68 <221> NAME/KEY: variation
 69 <222> LOCATION: (1)..(20)

RAW SEQUENCE LISTING DATE: 08/08/2000
 PATENT APPLICATION: US/09/508,487 TIME: 15:53:06

Input Set : A:\Pto.amc
 Output Set: N:\CRF3\08082000\I508487.raw

```

70 <223> OTHER INFORMATION: N stands for any nucleic acid
72 <220> FEATURE:
73 <221> NAME/KEY: variation
74 <222> LOCATION: (1)..(20)
75 <223> OTHER INFORMATION: R stands for G or A
77 <220> FEATURE:
78 <221> NAME/KEY: variation
79 <222> LOCATION: (1)..(20)
80 <223> OTHER INFORMATION: D stands for A or G or T/U
82 <400> SEQUENCE: 3
W--> 83 tgnrcraarc tncdatncc 20
86 <210> SEQ ID NO: 4
87 <211> LENGTH: 74
88 <212> TYPE: DNA
89 <213> ORGANISM: Borrelia burgdorferi
91 <400> SEQUENCE: 4
92 acatctaagc aggaccctat tgtaccatct ttattgaacc tttttttagg gtttggcatc 60
93 gggagcttcg ccca 74
96 <210> SEQ ID NO: 5
97 <211> LENGTH: 34
98 <212> TYPE: DNA
99 <213> ORGANISM: Borrelia burgdorferi
101 <400> SEQUENCE: 5
102 tgtaccatct ttattgaacc tttttttagg gttt 34
105 <210> SEQ ID NO: 6
106 <211> LENGTH: 26
107 <212> TYPE: DNA
108 <213> ORGANISM: Borrelia burgdorferi
110 <400> SEQUENCE: 6
111 aaaccctaaa aaaaggttca ataaag 26
114 <210> SEQ ID NO: 7
115 <211> LENGTH: 26
116 <212> TYPE: DNA
117 <213> ORGANISM: Borrelia burgdorferi
119 <400> SEQUENCE: 7
120 gatttttcat tggatcccag aatttg 26
123 <210> SEQ ID NO: 8
124 <211> LENGTH: 26
125 <212> TYPE: DNA
126 <213> ORGANISM: Borrelia burgdorferi
128 <400> SEQUENCE: 8
129 ctataccaac cgaattcaaa tccaag 26
132 <210> SEQ ID NO: 9
133 <211> LENGTH: 21
134 <212> TYPE: DNA
135 <213> ORGANISM: Borrelia burgdorferi
137 <400> SEQUENCE: 9
138 ggtttttatg gatccacttt t 21
141 <210> SEQ ID NO: 10

```

RAW SEQUENCE LISTING DATE: 08/08/2000
PATENT APPLICATION: US/09/508,487 TIME: 15:53:06

Input Set : A:\Pto.amc
Output Set: N:\CRF3\08082000\I508487.raw

```
142 <211> LENGTH: 25
143 <212> TYPE: DNA
144 <213> ORGANISM: Borrelia burgdorferi
146 <400> SEQUENCE: 10
147 tatgctacca tggatccagt tttaa                25
150 <210> SEQ ID NO: 11
151 <211> LENGTH: 31
152 <212> TYPE: DNA
153 <213> ORGANISM: Borrelia burgdorferi
155 <400> SEQUENCE: 11
156 cgggatccgt tttttctagc ttgctcaag c        31
159 <210> SEQ ID NO: 12
160 <211> LENGTH: 50
161 <212> TYPE: DNA
162 <213> ORGANISM: Borrelia burgdorferi
164 <400> SEQUENCE: 12
165 ggaattccct ggttccgct ggatccatga ataaactttt aatttttgtt 50
168 <210> SEQ ID NO: 13
169 <211> LENGTH: 25
170 <212> TYPE: DNA
171 <213> ORGANISM: Borrelia burgdorferi
173 <400> SEQUENCE: 13
174 taaaaaaatt taaagaaaag gaggg                25
177 <210> SEQ ID NO: 14
178 <211> LENGTH: 27
179 <212> TYPE: DNA
180 <213> ORGANISM: Borrelia burgdorferi
182 <400> SEQUENCE: 14
183 ggcttataga atccggggct tatttgg            27
186 <210> SEQ ID NO: 15
187 <211> LENGTH: 24
188 <212> TYPE: DNA
189 <213> ORGANISM: Borrelia burgdorferi
191 <400> SEQUENCE: 15
192 tagaattcag caattgcaat acag                24
195 <210> SEQ ID NO: 16
196 <211> LENGTH: 32
197 <212> TYPE: DNA
198 <213> ORGANISM: Borrelia burgdorferi
200 <400> SEQUENCE: 16
201 caccattttt ctagataaat aaaattaata gc        32
204 <210> SEQ ID NO: 17
205 <211> LENGTH: 33
206 <212> TYPE: DNA
207 <213> ORGANISM: Borrelia burgdorferi
209 <400> SEQUENCE: 17
210 ataaaaggta ccatagcttt tttgaaaga cag        33
213 <210> SEQ ID NO: 18
214 <211> LENGTH: 759
```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/508,487

DATE: 08/08/2000

TIME: 15:53:06

Input Set : A:\Pto.amc

Output Set: N:\CRF3\08082000\I508487.raw

```

215 <212> TYPE: DNA
216 <213> ORGANISM: Borrelia burgdorferi
218 <220> FEATURE:
219 <221> NAME/KEY: CDS
220 <222> LOCATION: (170)..(709)
222 <400> SEQUENCE: 18
223 attgttataaa gaattgaaat tgataatttt atggtcaaat caagaagctc tattgggaag 60
225 cgaatttcaa gcaataattt gaaaaaagtt aaattttaat aactttataa acctttttta 120
227 aatttcatta atatgctacc atagtaccag tttaataaaa ggggttttt atg aat aaa 178
228                                     Met Asn Lys
229                                     1
231 ctt tta att ttt gtt ttg gca acc ttt tgt gtt ttt tct agc ttt gct 226
232 Leu Leu Ile Phe Val Leu Ala Thr Phe Cys Val Phe Ser Ser Phe Ala
233      5      10      15
235 caa gct aat gat tct aaa aat ggt gcg ttt ggg atg agt gct gga gaa 274
236 Gln Ala Asn Asp Ser Lys Asn Gly Ala Phe Gly Met Ser Ala Gly Glu
237 20      25      30      35
239 aaa ctt ttg gtt tat gaa act agc aag caa gat cct att gta cca ttt 322
240 Lys Leu Leu Val Tyr Glu Thr Ser Lys Gln Asp Pro Ile Val Pro Phe
241      40      45      50
243 tta ttg aac ctt ttt tta ggg ttt gga ata ggc tcc ttt gct caa gga 370
244 Leu Leu Asn Leu Phe Leu Gly Phe Gly Ile Gly Ser Phe Ala Gln Gly
245      55      60      65
247 gat att ctt gga ggt tct ctt att ctt gga ttt gat gcg gtt ggt ata 418
248 Asp Ile Leu Gly Gly Ser Leu Ile Leu Gly Phe Asp Ala Val Gly Ile
249      70      75      80
251 ggg ctt ata ctt gcg ggg gct tat ttg gat atc aaa gcg ctt gat ggt 466
252 Gly Leu Ile Leu Ala Gly Ala Tyr Leu Asp Ile Lys Ala Leu Asp Gly
253      85      90      95
255 att act aaa aaa gct gct ttt caa tgg act tgg ggt aag gga gtt atg 514
256 Ile Thr Lys Lys Ala Ala Phe Gln Trp Thr Trp Gly Lys Gly Val Met
257 100      105      110      115
259 tta gca ggt gtg gtt act atg gct gtg aca aga tta aca gaa att att 562
260 Leu Ala Gly Val Val Thr Met Ala Val Thr Arg Leu Thr Glu Ile Ile
261      120      125      130
263 ctt cca ttt aca ttt gct aat agt tat aat agg aag cta aaa aat agc 610
264 Leu Pro Phe Thr Phe Ala Asn Ser Tyr Asn Arg Lys Leu Lys Asn Ser
265      135      140      145
267 ctt aat gta gct tta gga gga ttt gaa cct agt ttt gat gtt gca atg 658
268 Leu Asn Val Ala Leu Gly Gly Phe Glu Pro Ser Phe Asp Val Ala Met
269      150      155      160
271 ggc caa tcc agt gct ctt ggg ttt gaa ctg tct ttc aaa aaa agc tat 706
272 Gly Gln Ser Ser Ala Leu Gly Phe Glu Leu Ser Phe Lys Lys Ser Tyr
273      165      170      175
275 taa ttttatttat tacaaaaatg ggtgattgca attctgtatt gaaatgggtg 759
280 <210> SEQ ID NO: 19
281 <211> LENGTH: 179
282 <212> TYPE: PRT
283 <213> ORGANISM: Borrelia burgdorferi

```

RAW SEQUENCE LISTING DATE: 08/08/2000
 PATENT APPLICATION: US/09/508,487 TIME: 15:53:06

Input Set : A:\Pto.amc
 Output Set: N:\CRF3\08082000\I508487.raw

```

285 <400> SEQUENCE: 19
286 Met Asn Lys Leu Leu Ile Phe Val Leu Ala Thr Phe Cys Val Phe Ser
287   1           5           10           15
288 Ser Phe Ala Gln Ala Asn Asp Ser Lys Asn Gly Ala Phe Gly Met Ser
289           20           25           30
290 Ala Gly Glu Lys Leu Leu Val Tyr Glu Thr Ser Lys Gln Asp Pro Ile
291   35           40           45
292 Val Pro Phe Leu Leu Asn Leu Phe Leu Gly Phe Gly Ile Gly Ser Phe
293   50           55           60
294 Ala Gln Gly Asp Ile Leu Gly Gly Ser Leu Ile Leu Gly Phe Asp Ala
295   65           70           75           80
296 Val Gly Ile Gly Leu Ile Leu Ala Gly Ala Tyr Leu Asp Ile Lys Ala
297           85           90           95
298 Leu Asp Gly Ile Thr Lys Lys Ala Ala Phe Gln Trp Thr Trp Gly Lys
299           100          105          110
300 Gly Val Met Leu Ala Gly Val Val Thr Met Ala Val Thr Arg Leu Thr
301           115          120          125
302 Glu Ile Ile Leu Pro Phe Thr Phe Ala Asn Ser Tyr Asn Arg Lys Leu
303           130          135          140
304 Lys Asn Ser Leu Asn Val Ala Leu Gly Gly Phe Glu Pro Ser Phe Asp
305           145          150          155          160
306 Val Ala Met Gly Gln Ser Ser Ala Leu Gly Phe Glu Leu Ser Phe Lys
307           165          170          175
308 Lys Ser Tyr
312 <210> SEQ ID NO: 20
313 <211> LENGTH: 862
314 <212> TYPE: DNA
315 <213> ORGANISM: Borrelia afzelii
317 <220> FEATURE:
318 <221> NAME/KEY: CDS
319 <222> LOCATION: (219)..(755)
321 <400> SEQUENCE: 20
322 gatttttcat tggatcccag aatttgtaga attttcgaca aataaagaca ttattaaaag 60
324 aattgaaatt gctaatttta tggatcaaac aagaagctct attgggaagc gaatttcaag 120
326 taatactttg aaaaaagtta aattttaaata gttttaaaaa ccttttttaa atttcattaa 180
328 taagtactta taataaccagt ttttaataaag aggttttt atg aat aaa ttt tta att 236
329                                     Met Asn Lys Phe Leu Ile
330                                     1           5
332 gtt gtt ttg cta gcc ttt tgt gtt ttt tct agc ttt gct caa gct gat 284
333 Val Val Leu Leu Ala Phe Cys Val Phe Ser Ser Phe Ala Gln Ala Asp
334           10           15           20
336 gat tct aaa agc gct ttt aat ttg gga gcg gga gaa aaa ctt tta gct 332
337 Asp Ser Lys Ser Ala Phe Asn Leu Gly Ala Gly Glu Lys Leu Leu Ala
338           25           30           35
340 tat gaa act agt aag aaa gat cct att gtg cca ttt tta ttg aac ctt 380
341 Tyr Glu Thr Ser Lys Lys Asp Pro Ile Val Pro Phe Leu Leu Asn Leu
342           40           45           50
344 ttt tta ggg ttt gga ata ggt tct ttt gct caa gga gat att ctt ggg 428
345 Phe Leu Gly Phe Gly Ile Gly Ser Phe Ala Gln Gly Asp Ile Leu Gly

```

VERIFICATION SUMMARY

PATENT APPLICATION: US/09/508,487

DATE: 08/08/2000
TIME: 15:53:07

Input Set : A:\Pto.amc

Output Set: N:\CRF3\08082000\I508487.raw

L:59 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2
L:83 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3

Input Set : A:\Berg21.app
Output Set: N:\CRF3\08032000\I508487.raw

```

3 <110> APPLICANT: BERGSTROM, Sven
5 <120> TITLE OF INVENTION: P13 ANTIGENS FROM BORRELIA
7 <130> FILE REFERENCE: 454312-3150
9 <140> CURRENT APPLICATION NUMBER: 09/508,487
10 <141> CURRENT FILING DATE: 2000-03-10
12 <150> PRIOR APPLICATION NUMBER: 60/059,036
13 <151> PRIOR FILING DATE: 1997-09-10
15 <150> PRIOR APPLICATION NUMBER: 1041/97
16 <151> PRIOR FILING DATE: 1997-09-10
18 <150> PRIOR APPLICATION NUMBER: PCT/IB98/01424
19 <151> PRIOR FILING DATE: 1998-09-04
21 <160> NUMBER OF SEQ ID NOS: 31
23 <170> SOFTWARE: PatentIn Ver. 2.1

```

Does Not Comply
Corrected Diskette Needed

ERRORED SEQUENCES

```

213 <210> SEQ ID NO: 18
214 <211> LENGTH: 759
215 <212> TYPE: DNA
216 <213> ORGANISM: Borrelia burgdorferi
218 <220> FEATURE:
219 <221> NAME/KEY: CDS
220 <222> LOCATION: (170)..(709)
222 <400> SEQUENCE: 18
223 attgtttaaaa gaattgaaat tgataat ttt atgggtcaaat caagaagctc tattgggaa 60
225 cgaatttcaa gcaataattt gaaaaaagt aaattttaa aactttaaaa acctttttta 120
227 aatttcatta atatgctacc atagtaccg ttttaataaa ggggttttt atg aat aaa 178
228 Met Asn Lys
229 1
231 ctt tta att ttt gtt ttg gca acc ttt tgt gtt ttt tct agc ttt gct 226
232 Leu Leu Ile Phe Val Leu Ala Thr Phe Cys Val Phe Ser Ser Phe Ala
233 5 10 15
235 caa gct aat gat tct aaa aat ggt gcg ttt ggg atg agt gct gga gaa 274
236 Gln Ala Asn Asp Ser Lys Asn Gly Ala Phe Gly Met Ser Ala Gly Glu
237 20 25 30 35
239 aaa ctt ttg gtt tat gaa act agc aag caa gat cct att gta cca ttt 322
240 Lys Leu Leu Val Tyr Glu Thr Ser Lys Gln Asp Pro Ile Val Pro Phe
241 40 45 50
243 tta ttg aac ctt ttt tta ggg ttt gga ata ggc tcc ttt gct caa gga 370
244 Leu Leu Asn Leu Phe Leu Gly Phe Gly Ile Gly Ser Phe Ala Gln Gly
245 55 60 65
247 gat att ctt gga ggt tct ctt att ctt gga ttt gat gcg gtt ggt ata 418
248 Asp Ile Leu Gly Gly Ser Leu Ile Leu Gly Phe Asp Ala Val Gly Ile
249 70 75 80
251 ggg ctt ata ctt gcg ggg gct tat ttg gat atc aaa gcg ctt gat ggt 466
252 Gly Leu Ile Leu Ala Gly Ala Tyr Leu Asp Ile Lys Ala Leu Asp Gly

```


RAW SEQUENCE LISTING

DATE: 08/03/2000

PATENT APPLICATION: US/09/508,487

TIME: 12:02:05

Input Set : A:\Berg21.app

Output Set: N:\CRF3\08032000\I508487.raw

```

253      85      90      95
255 att act aaa aaa gct gct ttt caa tgg act tgg ggt aag gga gtt atg 514
256 Ile Thr Lys Lys Ala Ala Phe Gln Trp Thr Trp Gly Lys Gly Val Met
257 100      105      110      115
259 tta gca ggt gtg gtt act atg gct gtg aca aga tta aca gaa att att 562
260 Leu Ala Gly Val Val Thr Met Ala Val Thr Arg Leu Thr Glu Ile Ile
261      120      125      130
263 ctt cca ttt aca ttt gct aat agt tat aat agg aag cta aaa aat agc 610
264 Leu Pro Phe Thr Phe Ala Asn Ser Tyr Asn Arg Lys Leu Lys Asn Ser
265      135      140      145
267 ctt aat gta gct tta gga gga ttt gaa cct agt ttt gat gtt gca atg 658
268 Leu Asn Val Ala Leu Gly Gly Phe Glu Pro Ser Phe Asp Val Ala Met
269      150      155      160
271 ggc caa tcc agt gct ctt ggg ttt gaa ctg tct ttc aaa aaa agc tat 706
272 Gly Gln Ser Ser Ala Leu Gly Phe Glu Leu Ser Phe Lys Lys Ser Tyr
273      165      170      175
275 tag ttttatttat tacaaaaatg ggtgattgca attctgtatt gaaatgggtg 759
E--> 277 180

```

VERIFICATION SUMMARY

PATENT APPLICATION: US/09/508,487

DATE: 08/03/2000

TIME: 12:02:06

Input Set : A:\Berg21.app

Output Set: N:\CRF3\08032000\I508487.raw

L:59 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2

L:83 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3

L:277 M:254 E: No. of Bases conflict, LENGTH:Input:80 Counted:759 SEQ:18